

CLAIM AMENDMENTS

1-38 (Canceled)

39. (New) A chromium steel alloy including hafnium and carbon, in which the relative proportions of hafnium and carbon are such that substantially all of the carbon is present as hafnium carbide.

40. (New) An alloy according to claim 39, in which substantially no amount of phase M₂₃C₆ is present.

41. (New) An alloy according to claim 39, in which the portion of hafnium is at least stoichiometrically equal to the proportion of carbon.

42. (New) An alloy according to claim 39, in which the proportion of hafnium is at least 0.5 atomic %.

43. (New) An alloy according to claim 39, in which the hafnium level is between 0.5 and 1.0 atomic %.

44. (New) An alloy according to claim 39, in which the alloy includes a plurality of particles of different sizes and the hafnium carbide is present in the form of a plurality of relatively small precipitate particles which reduce the average particle size in comparison with a similar alloy without hafnium.

45. (New) An alloy according to claim 39, in which the average particle size measured as an equivalent circle diameter is less than 90nm.

46. (New) An alloy according to claim 39, in which the said average particle size is less than 50nm.

47. (New) An alloy according to claim 39, in which the hafnium is substantially only present in a surface layer.

48. (New) An alloy according to claim 39, in which the surface layer is up to 2 μ m in thickness.

49. (New) An alloy according to claim 39, in which the alloy has been heat treated, and the heat treatment takes place after the addition of hafnium to the alloy.

50. (New) An alloy according to claim 39, in which the alloy has been heat treated to a temperature of 700 - 760°C.

51. (New) An alloy according to claim 39, in which the alloy has been heat treated for 1 to 2 hours.

52. (New) An item formed of a chromium steel alloy including hafnium and carbon, in which the relative proportions of hafnium and carbon are such that substantially all of the carbon is present as hafnium carbide.

53. (New) An item according to claim 52, in which the alloy includes hafnium and the hafnium is substantially only present in a surface layer.

54. (New) An item according to claim 52, in which the alloy includes hafnium, and the hafnium is substantially only present in a surface layer which is up to 2 μ m in thickness.

55. (New) An item according to claim 52, in which the alloy includes hafnium and the hafnium is substantially only present in a surface layer which is between 1 and 2 μ m in thickness.

56. (New) A method of manufacturing a chromium steel alloy including hafnium and carbon, in which the relative proportions of hafnium and carbon are such that substantially all of the carbon is present as hafnium carbide, the method including the steps of adding hafnium to a chromium steel alloy, and then heat treating the resulting alloy.

57. (New) A method according to claim 56, in which the alloy is heat treated to a temperature of 700-760°C.

58. (New) A method according to claim 56, in which the heat treatment is for 1 to 2 hours.

59. (New) A method according to claim 56, in which the hafnium is added so that the hafnium is only present in a surface layer.

60. (New) Use of hafnium as an ingredient in a chromium steel alloy according to claim 39 to reduce creep.

61. (New) Use of hafnium as an ingredient in a chromium steel alloy according to claim 39 to increase corrosion resistance.